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EDUCATIONAL NEEDS OF BEGINNING DAIRY FARM OPERATORS IN NEW YORK, 1963.

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FROM A LIST OF 2,260 BEGINNING DAIRY OPERATORS THE STRATIFIED RANDOM CLUSTER METHOD WAS USED TO SELECT APPROXIMATELY 10 PERCENT WHICH REPRESENTED 13 AGRICULTURAL REGIONS OF NEW YORK. THIS SAMPLE OF 223 OPERATORS WAS INTERVIEWED TO (1) DETERMINE THEIR PERSONAL CHARACTERISTICS, (2) ASCERTAIN THEIR ACHIEVEMENT LEVEL WITH RESPECT TO SELECTED FARM BUSINESS FACTORS, (3) DETERMINE THEIR LEVEL OF PARTICIPATION IN EDUCATIONAL ACTIVITIES AND FARM ORGANIZATIONS, (4) DETERMINE THE ESTABLISHMENT PATTERN THEY USED TO ATTAIN THEIR PRESENT STATUS, (5) DETERMINE NEEDED MODIFICATIONS IN AGRICULTURAL PROCEDURES, (6) DETERMINE THE EXTENT TO WHICH THEY ADOPTED SELECTED PRACTICES, AND (7) IDENTIFY PROBLEMS THEY NEEDED ASSISTANCE WITH AND DETERMINE THEIR RELATIVE IMPORTANCE. DATA INDICATED (1) THEY HAD AN AVERAGE OF 12.4 YEARS OF EDUCATION, (2) THEY RANKED BETTER THAN THE AVERAGE COMMERCIAL DAIRYMAN IN BUSINESS SIZE, PRODUCTION, AND LABOR EFFICIENCY, BUT THERE WERE GREAT VARIATIONS AMONG RESPONDENTS, (3) MANY READ TRADE LITERATURE, SOUGHT ASSISTANCE FROM MANY SOURCES, AND BELONGED TO FARM ORGANIZATIONS, (4) THEY PREFERRED LEARNING ACTIVITIES IN WHICH THEY COULD PARTICIPATE, (5) THE MOST IMPORTANT AGRICULTURAL OCCUPATION BEFORE OWNERSHIP OR PARTNERSHIP WAS FARM LABORER, (6) THEY NEEDED ASSISTANCE WITH MANY PROBLEMS, (7) THEY HAD NOT ADOPTED A NUMBER OF APPROVED PRACTICES, AND (8) THE MOST IMPORTANT PROBLEMS IDENTIFIED WERE IN FARM MANAGEMENT. (EM)

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Study Design

Dairying, New York's largest single farming enterprise, is becoming a more complex business with each passing year. Farms are growing larger in size, the dairyman is becoming more efficient as a producer, the production per given unit is steadily rising, and the amount of investment and operating capital is continually increasing. Furthermore, agricultural technology is advancing rapidly, as is also the degree of specialization in farming. It is anticipated that the number of farmers needed annually will decrease, while at the same time the nation's requirement for food and fiber will increase.

In these times of dynamic changes, it is in society's best interest, as well as their own, that the farmers who enter the dairy business have more knowledge and skill than ever before. One way to help them get established is to provide educational programs that are directly related to farming activities and that are therefore based on a careful analysis of the educational needs of beginning farmers. The results could have implications for various agencies, such as the Extension Service, the State Education Department, the Soil Conservation Service, and other organizations interested in sponsoring such programs.

Thus, the primary aim of this study was to determine the educational needs in dairy farm operation and management of beginning farm operators in New York.

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Specific Objectives of the Study

The investigators established the following specific objectives with respect to beginning dairy farm operators:

- To determine their personal characteristics.
- To ascertain their level of achievement with respect to selected farm business factors.
- To determine their level of participation in educational activities and farm organizations.
- To determine the establishment pattern they used in attaining their present status in farming.
- To determine those agricultural procedures that should be modified.
- To determine the extent to which they adopted selected approved practices.
- To identify those problems with which they wanted assistance.
- To determine the relative importance of their problems.

Previous Studies

Some typical examples of the kind of work that has been done on the subject of how young men become established in farming are listed in the references (1, 2, 3, 4, 8). Most of these studies have emphasized the financial aspects of the process of establishment.

Although few studies in recent years have dealt specifically with the *educational needs* of beginning farmers, several have shed some light on this subject. The majority were limited in scope to needs of beginning farmers located in given school districts, and most of them state educational needs in broad, general terms (6, 9, 10, 11, 12). The report by Lester (6) illustrates this point. He states that "a majority of the young farmers expressed need for technical assistance in various areas of agriculture including farm management, credit, marketing farm products, farm mechanics and record keeping." Apparently, no effort was made to further identify the educational needs within these broad technical areas.

In regard to educational needs, at least the studies by Lechner (5) and by Neisler (7) definitely pinpointed the particular problems in which additional instruction was needed. Lechner identified a number of clearly defined "very important" farm mechanics skills which should be included in an educational program for young farmers, while Neisler found that young farmers wanted instruction in the following clearly identifiable jobs: "(1) fertilizing corn, (2) selecting the varieties of corn, (3) fertilizing cotton, (4) selecting the varieties of cotton, . . . (20) planning a new barn." Personius (13) tested and evaluated a method for determining the instructional needs of a local group of young farmers. In the course of this

study, he identified the educational needs that pertain to individuals. Such a degree of specificity is essential to the planning of effective educational programs for beginning farmers.

In summary, the review of literature showed that most studies concerning beginning farmers have dealt with the economic aspects of their becoming established. The few that have centered on their educational needs have primarily been limited to the boundaries of school districts and have tended to state their findings in broad, general terms inadequate for purposes of planning educational programs.

Definition of a Beginning Dairy Farm Operator

For the purpose of this study, a beginning dairy farm operator is one who is responsible for, and takes part in, the major decisions made in conducting a dairy farm business; he is responsible for, or performs himself, the labor necessary to operate the farm; his status is that of owner, partner, or renter of a farm; he has been farming at least 1, but not more than 7 years[1], he is not more than 39 years old[1]; and he spends most of his time in farming activities.

Study Population

Since the number and names of beginning dairy farm operators were not available from any single agency, identification of the population and selection of the sample involved key informants and the following steps. First, agricultural teachers, county agents, and key bankers in the state were requested to submit a list of all the young men in their respective areas who met the definition of a beginning dairy farm operator given above. Also, these key informants were requested to classify the herd of each beginning dairy farmer into one of 3 sizes. A total of 2260 names was submitted.

Sampling Procedure

The stratified random cluster method was used to draw a sample. The population was located within 1 of the 13 agricultural regions of New York State (fig. 1). The beginning dairy farmers within each of the regions were stratified into 3 groups, according to the number of cows they milked, using these intervals: 0–25, 26–50, and 51 or more cows per herd, and the proportion falling in each group was calculated for each region. Clusters were selected from each region so that the sample represented 10 percent of the beginning dairy farmers in each region.

[1] These limits represent the first quartile of the dairy farm operators in New York as derived from 1959 Census figures.

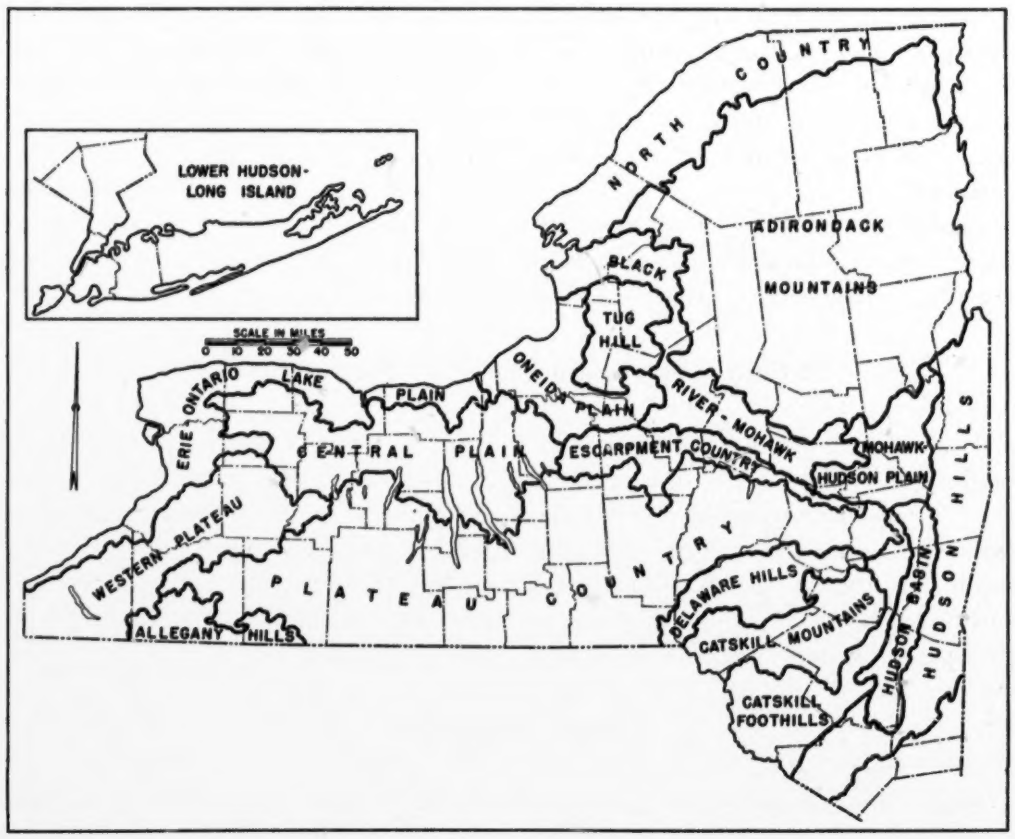

Figure 1. **Agricultural regions of New York State.**

Designing the Survey Instrument

The survey form was developed on the basis of previous research and a study of the agricultural literature. In this development the investigators were ably assisted by staff members in the College of Agriculture. In the survey instrument every attempt was made to provide for the solicitation of information needed to achieve the first 7 of the 8 previously listed specific objectives of the study. In designing the survey instrument, the researchers worked closely with members of the Departments of Animal Husbandry, Agricultural Engineering, Agricultural Economics, and Agronomy on technical matters. In addition, the survey form was reviewed by members of the Departments of Rural Education and Rural Sociology and by members of the Agricultural Extension Service. Finally, it was field tested and revised.

In addition, a mailed form was sent to the school administrators for the purpose of ascertaining the scholastic rank in his class of each beginning farmer in the study.

Collection of Data

A group of 7 interviewers composed of graduate students and staff members, all of whom had been former teachers of agriculture, was selected and instructed on interview techniques. The data were collected in the summer of 1963. Appointments for interviews with individual farmers were arranged through the cooperation of teachers of agriculture, agricultural agents, or bankers. Each week the survey forms filled out were checked for completeness, consistency, and accuracy, so as to maintain a high level of validity.

Out of 240 beginning dairy farmers who were interviewed, 223 provided usable data, and thus were included in the study (fig. 2). The principals of the high schools which the 223 beginning farmers attended were mailed a form requesting the rank in class of each of these former students.

Analysis of Data

The survey form was pre-coded to facilitate putting the data on machine cards. A book was prepared for use in coding, tabulating, and

Figure 2. **Location of respondents interviewed in New York State.**

analyzing the data. The data were punched on machine cards, forming a master deck, which was subsequently replicated for use as work decks. The descriptive data were tabulated and processed by a 101 computer.

Findings

This chapter provides a description of the beginning farm operators in terms of selected individual characteristics and also gives detailed information on those phases of the farming operation that seem to indicate educational needs. Therefore, in the following sections descriptive data on beginning farmers will be presented that relate to: their personal characteristics; their level of farming achievement with respect to selected farm business factors; their participation in educational activities and farm organizations; the various status classifications through which they have passed; the agricultural procedures they have used, the approved practices they have adopted, their expressed educational needs, and their most important problems. These data should provide an important basis for determining the educational needs of beginning dairy farmers in New York.

Personal Characteristics of Beginning Dairy Farmers

Beginning dairy farmers had a mean age of 26.3, with a range of 17 to 39 and a standard deviation of 4.9. The frequency distribution of their ages is presented in table 1. Table 2 shows that more than half of the sample were owners of their farm businesses, while less than half were partners and only a very few were renters. Eighty percent of the beginning dairy farm operators were married and had an average of 2 children per family.

The respondents had completed an average of 12.4 years of schooling, a figure nearly identical with the average for their wives, namely, 12.5 years. Using graduation from high school as a benchmark, it was determined that only 13 percent did

Table 1. **Chronological age distribution of 223 beginning dairy farmers**

Age	Total	
	Number	Percent
17 – 18	3	1
19 – 21	24	11
22 – 24	47	21
25 – 27	55	25
28 – 30	41	18
31 – 33	29	13
34 – 36	16	7
37 – 39	8	4
Totals	223	100

Table 2. **Farming status of 223 beginning dairy farmers**

Status	Number	Percent
Owner	125	56
Partner	92	41
Tenant	6	3
Totals	223	100

not attain this level of education, while the remaining 87 percent did. Furthermore, as can be seen from table 3, nearly 25 percent of the individuals completed 1 or more years of college. In contrast, the findings of this study showed that 68 percent of the fathers of beginning dairy farm operators had *not* completed high school, while only 11 percent had gone beyond high school. Compared with their fathers, beginning farmers had an average of 2.4 years more schooling.

While they were in high school, 74 percent of the beginning farmers had taken a year or more of vocational agriculture. Four years were completed by 50 percent, 3 years by 13 percent, and 1 or 2 years by 11 percent of the men. Only one-fourth of the group had not studied vocational agriculture in high school. Appropriately enough, those respondents who had attended college for a year or more had pursued a general agriculture or a general dairy curriculum.

With respect to their achievement, it can be reported that the sample had a mean percentile scholastic class rank of 46, with a range from 4 to 99, and a standard deviation of 26.

Table 4 gives the years of membership in a 4-H club. Two-thirds of the beginning farmers had been members for a period of time ranging from 1 to 11 or more years. Half of the respondents had been members for 3 or more years, while two-fifths had held membership for 5 years or more. Only one-third of the group had never been members of a 4-H club.

Table 3. **Years of school completed by 223 beginning dairy farmers**

Years completed	Number	Percent
9 or less	10	4
10	10	5
11	8	4
12	140	63
13	14	6
14	29	13
15 or more	12	5
Totals	223	100

Table 4. **Years of 4-H club membership of 223 beginning farmers**

Duration	Number	Percent
0 years	73	33
1 – 2 years	36	16
3 – 4 years	26	12
5 – 6 years	23	10
7 – 8 years	18	8
9 – 10 years	23	10
11 or more years	24	11
Totals	223	100

Level of Farming Achievement with Respect to Selected Farm Business Factors

Realizing that one indication of a beginning dairy farm operator's needs for further training might be his level of farming achievement, the investigators decided to analyze the farm businesses of these respondents in terms of selected farm business factors, namely, size of business, production, and labor efficiency. For example, it was felt that if

beginning farmers operated at a low level of efficiency in comparison with other commercial farmers of New York, a program of instruction in ways and means of increasing farm efficiency might be in order. On the other hand, if beginning dairy farm operators showed that their farms were considerably smaller than most, attention should perhaps be focused on ways and means of increasing the size of business. With these thoughts in mind, data were collected on the factors listed.

One of the most common indices of achievement in farming is the size of the business. The 4 separate factors that provide an indication of size are: work units per farm, man equivalent per farm, cows per farm, and pounds of milk sold per farm. Table 5 shows that in 1962, the average beginning dairyman in New York State had 523 work units, the equivalent of 1.8 full-time workers (including himself), and 43 cows that produced 435,100 pounds of milk. When compared with the achievements of commercial farmers in New York, as reported in the 1964 Farm Business Chart issued by the Department of Agricultural Economics, New York State College of Agriculture, the respondents were unquestionably superior to the average commercial dairyman. Table 5 shows that beginning farmers ranked in the 7th, 6th, 8th, and 8th decile, respectively, for the 4 factors measured. In this report, the higher the decile rating, the higher the level of achievement. Thus, when it was shown that beginning farmers ranked 7th in "work units per farm" it means that they had enough work units that their mean number, 523, was large enough to be classified in the 7th highest decile, of commercial dairymen with respect to this factor.

Regarding production, expressed as pounds of milk sold per cow,

Table 5. **Farm business factors for 223 beginning dairy farm operators, New York, 1962**

Farm business factor	Mean	Standard deviation	Decile ranking
Size of business*			
Work units per farm	523	215	7th†
Man equivalent per farm	1.8	0.7	6th
Cows per farm	43	22.4	8th
Pounds of milk sold per farm	435,100	282,000	8th
Production‡			
Pounds milk sold per cow	10,119	4,225	8th
Labor efficiency‡			
Work units per man	291	103	7th
Cows per man	24	8	8th
Pounds of milk sold per man	241,722	100,800	7th

* Means for these computed as follows: For each of the 4 factors, data collected from 223 farms, totalled, and divided by 223.

† This rating to be interpreted as follows: 223 beginning dairy farm operators had enough work units per farm that their mean number, 523, was large enough to be classified in the 7th highest decile of commercial dairymen in New York with respect to this factor.

‡ These means mathematically derived through use of the means for factors relating to size of business found in upper part of table.

beginning dairymen could be credited with selling 10,119 pounds of milk per cow, a level of achievement that ranked them in the 8th decile of commercial dairymen. Furthermore, with respect to the 3 labor efficiency factors selected for study, beginning dairymen had 291 work units per man, 24 cows per man, and 241,722 pounds of milk sold per man, an achievement level that ranked them in the 7th, 8th, and 9th decile, respectively, for the 3 factors mentioned.

Notwithstanding the achievements of the group of respondents *as a whole,* it might be interesting to see the variations in achievement found among the individuals in the study for certain farm business factors. For example, the frequency distribution of total work units for beginning farmers, shown in table 6, is spread over a wide range from less than 200 to more than 1000. One tenth had fewer than 300 total work units per farm. Three-fifths of the group were divided rather evenly among the intervals, from 300 to 1000. Smaller percentages were found again in the remaining intervals.

Table 6. **Total work units per farm for 223 beginning dairy farmers**

Work units	Total	
	Number	Percent
200 or less	4	2
201 – 300	20	9
301 – 400	44	20
401 – 500	48	22
501 – 600	45	20
601 – 700	18	8
701 – 800	11	5
801 – 900	12	5
901 – 1000	7	3
1001 or more	13	6
Totals	223	100

Table 7 shows that 50 percent of the sample had a man equivalent of 1.0–1.9, while 36 percent had 2.0–2.9. Twelve percent of the farmers were involved in farm businesses with a man equivalent of 3.0 or more. The extreme range in the sample may be noted from the low of 0.5 to the high of 5.5 man equivalent.

Table 7. **Man equivalent for farm business of 223 beginning dairy farmers**

Man equivalent	Total	
	Number	Percent
0.5 – 0.9	5	2
1.0 – 1.9	111	50
2.0 – 2.9	81	36
3.0 – 3.9	20	9
4.0 – 4.9	4	2
5.0 – 5.5	2	1
Totals	223	100

Relatively speaking, perhaps greater variation was found in the number of cows per farm. Thirty percent of the sample were in the largest modal group, that is, they had from 30–39 cows. On the other hand, 8 percent had 19 cows or less while 7 percent had 70 cows or over. Three percent had 90 cows or more (table 8.)

Everyone works for high productivity. How did the farmers in this study do? A frequency distribution of the average pounds of milk sold per cow is shown in table 9. Although as many as 19 percent of the sample had an average of more than 13,000 pounds, or more than the average of the highest 10 percent of the commercial dairymen of New York, it is important for persons

Table 8. **Size of herds by farming status for 223 beginning dairy farmers**

Number of cows per herd	Percentage by status			Total	
	Owner	Partner	Tenant	Number	Percent
19 or less	6	2	–	18	8
20 – 29	12	6	1	43	19
30 – 39	21	8	1	67	30
40 – 49	11	8	–	43	19
50 – 59	3	6	1	21	10
60 – 69	2	5	–	14	7
70 – 79	–	2	–	5	2
80 – 89	–	2	–	5	2
90 – 99	–	1	–	2	1
100 and over	1	1	–	5	2
Totals	56	41	3	223	100

desiring to establish educational programs for beginning farmers to observe that 16 percent of them sold less than 8000 pounds of milk per cow.

Table 9. **Average pounds of milk sold per cow for herds of 223 beginning dairy farmers**

Herd average (lb milk/cow)	Total	
	Number	Percent
5,999 or less	11	5
6,000 – 6,999	9	4
7,000 – 7,999	16	7
8,000 – 8,999	18	8
9,000 – 9,999	32	14
10,000 – 10,999	38	17
11,000 – 11,999	37	17
12,000 – 12,999	20	9
13,000 – 13,999	24	11
14,000 – 14,999	10	4
15,000 – 15,999	6	3
16,000 and over	2	1
Totals	223	100

Labor efficiency was higher for the beginning farmers than for farmers as a whole in New York, as was pointed out earlier. A frequency distribution of work units per man is presented in table 10. Less than half of the farmers had 200–299 and less than one-fifth had more than 400 or less than 199.

Table 10. **Distribution of work units per man for 223 beginning dairy farmers**

Units per man	Total	
	Number	Percent
100 – 199	26	12
200 – 299	89	40
300 – 399	70	31
400 – 499	27	12
500 – 599	8	4
600 – 699	3	1
Totals	223	100

The number of cows per man gives some insight into the efficiency of a farm business. Although 84 percent of the farmers had less than 31 cows per man, 16 percent were at a very high level of efficiency, with 31 or more cows per man (table 11). This level of efficiency ranks the 16 percent who achieved

Table 11. **Cows per man for beginning farmers**

Cows per man	Total	
	Number	Percent
0 – 10	6	3
11 – 20	70	31
21 – 30	111	50
31 – 40	29	13
41 – 50	5	2
51 or more	2	1
Totals	223	100

it in the highest decile of New York commercial dairymen.

For the sample under study, the average farm income (receipts minus expenses) was $5000, with a range from $1600, to more than $12,000. Those with incomes below $6000 fell into 3 approximately equal-sized groups; the remaining 30 percent had a farm income of $6000 or more (table 12).

Table 12. **Farm income for 223 beginning dairy farmers**

Farm income (dollars)	Total	
	Number	Percent
0 – 1,999	48	21
2,000 – 3,999	58	26
4,000 – 5,999	51	23
6,000 – 7,999	24	11
8,000 – 9,999	17	8
10,000 – 11,999	8	4
12,000 and over	17	7
Totals	223	100

Participation in Educational Activities and in Farm Organizations

More than 20 different farm publications were read by beginning farmers, whose average was 6 magazines, with a range of 3 to 20 and a standard deviation of 3.4. The magazines most frequently mentioned are the 5 in the first group listed in table 13, with a range of readers from 87 to 67 percent of the whole group. The survey instrument itself included only the first 8 of the publications found in table 13. The remaining ones were volunteered by the respondents. Also, the interviewers were instructed to record data only for magazines that were read "regularly".

Table 13. **Farm publications read by 223 beginning dairy farmers**

Publication	Total	
	Number	Percent
Farm Journal	195	87
American Agriculturist	171	77
Hoard's Dairyman	160	72
N.Y.A.B.C. Co-operator	155	70
Successful Farming	149	67
G.L.F. News	119	53
Breed publications	93	42
Rural New Yorker	92	41
Better Farming	39	18
Farm Quarterly	31	14
Dairymen's League News	14	6
Extension News	10	5
Curtiss Herd Builder	6	3
Doane's Digest	6	3
Farm Bureau	6	3
Milk Producers' News	4	2
National Future Farmer	4	2
National Livestock Producer	4	2
Crops and Soils	3	1
Miscellaneous publications	12	5

In the normal course of conducting a farm business, an operator usually seeks counsel from a number of different sources. In this study, it was learned that feed dealers, agricultural extension agents, fertilizer dealers, seed dealers, the Soil Conservation Service, and commercial banks were listed by 50 to 76 percent of the beginning farmers as a source of farming or technical assistance at least once during the year covered by the study (table 14). Though not indicated in the table, the farmers received assistance on an average of 12.4 times a year, with a range of 0 to 33 and a standard deviation of 7.1. On the basis of the range and standard deviation, it can be concluded that

Table 14. **Number of times various sources provided farming or technical assistance to 223 beginning dairy farm operators***

Source	Frequency distribution by percent				Total 1 or more
	1 – 2	3 – 4	5 – 6	7 or more	
Feed dealers	30	20	11	15	76
Agricultural extension agents	31	18	11	10	70
Fertilizer dealers	46	13	3	2	64
Seed dealers	47	8	3	2	60
Soil Conservation Service	38	13	6	1	58
Commercial banks	30	11	5	4	50
Agricultural teachers	16	7	6	10	39
Farm Cooperative associations	18	6	5	5	34
Farm and Home Administration	5	1	1	2	9

* Table to be read as follows: 30% of respondents listed feed dealers as providing farming or technical assistance once or twice; 20% listed feed dealers as providing assistance 3 to 4 times; etc. 76% of all respondents received assistance from feed dealers 1 or more times.

16 percent of the population studied received assistance either not at all or up to 5.3 times, while a like percentage received help 19.5 or more times.

Membership in farm organizations is given in table 15. A large number of the beginning farmers were members of the Extension Service. The survey revealed that more than two-thirds held membership in a farmer cooperative. Milk marketing agencies and the Soil Conservation Service ranked next. Slightly more than half of the farmers were members of the Farm Bureau. A higher percentage of the farmers were officers in the Farm Bureau and milk marketing agencies than in other organizations.

In addition to being requested to indicate the farm organizations of which they were members, the respondents in this study were also asked to indicate the percentage of meetings of these organizations they attended. Attendance percentages are shown in table 16. Taken as a group, more of the beginning farmers attended meetings of the Extension Service than of any other agency or organization. The attendance pattern for both milk marketing agencies and farm cooperatives

Table 15. **Membership in farm organizations**

Organization	Member		Officer	
	Number	Percent	Number	Percent
Extension Service	191	86	5	2
Farm cooperatives	154	69	13	6
Milk marketing agencies	150	67	16	7
Soil Conservation Service	150	67	6	3
Farm Bureau	115	52	17	8
Young Farmer classes	80	36	–	–
Grange	48	22	6	3
Youth organizations	24	11	8	4
Farmers Union	—	—	–	–

Table 16. **Percentage of attendance at farm organization or agency meetings by 223 beginning dairy farmers***

Organization	Percentage of attendance					Total attending 25% or more
	0	25%	50%	75%	100%	
Extension Service	25	34	19	11	11	75
Milk marketing agency	38	25	11	6	20	62
Farm cooperatives	38	21	11	10	20	62
Soil Conservation Service	50	29	10	4	7	50
Farm Bureau	53	20	9	8	10	47
Young Farmers	65	6	5	5	19	35
Grange	83	10	2	1	4	17

* Table to be read as follows: 25% of respondents attended no Extension Service meetings, 34% attended 25% of meetings, 19% attended 50% of meetings, while 11% each attended 75% and 100% of all Extension Service meetings.

was similar with regard to the Farm Bureau and the Soil Conservation Service.

The above findings were not unexpected, as one could have predicted a high positive correlation between the number of beginning farmers belonging to an organization and the number attending its meetings. However, whereas table 16 focused attention on the percentage of attendance at farm organization or agency meetings by *all* 223 beginning farmers, table 17 shows what percentage of the members attended meetings of organizations to which they belonged. It was determined that the attendance ratio for members of the Young Farmer groups at the 25 percent level was 97 percent, or the highest of the groups studied. Milk marketing agencies came next, followed in descending order by farm cooperatives, the Farm Bureau, the Extension Service, the Grange, and the Soil Conservation Service. Note that the highest rate of attendance at 100 percent of the meetings was again recorded by members of the Young Farmer classes, and that the next closest rate was 23 percent lower, for members of milk marketing agencies.

The beginning farmers were asked when they watched television pro-

Table 17. **Percentage of beginning dairy farm operators attending meetings of organizations of which they were members**

Organization	Percentage of members attending			
	25% or more meetings	50% or more meetings	75% or more meetings	100% of meetings
Extension Service	88	48	26	13
Farm cooperatives	90	54	38	29
Milk marketing association	93	61	45	30
Soil Conservation Service	75	31	17	11
Farm Bureau	91	52	35	19
Young Farmer Classes	96	80	66	52
Grange	79	33	23	19

Table 18. **Time of day 223 beginning dairy farmers watched television programs about agriculture**

	Time of day					
	Morning		Afternoon		Evening	
	Number	Percent	Number	Percent	Number	Percent
Watched T.V.	10	5	45	21	10	5
Did not watch T.V.	213	95	178	79	213	95
Totals	223	100	223	100	223	100

grams about agriculture. A large majority of the beginning farmers, ranging from 79–95 percent, reported that they never watched such programs. At best, only one-fifth indicated that they watched such programs in either the morning, afternoon, or evening. Nearly one-third of the farmers reported that agricultural programs were not available for viewing.

The radio was used by a far greater number of farmers than was television for programs about agriculture (table 19). More than twice as many listened in the morning as in the evening, and the afternoon programs had the fewest listeners, with only half as many as in the evening. Though not shown in table 18, slightly more than one-fourth of the sample listened to radios at milking time.

From a list of 15 educational activities through which one may obtain information on operating a

Table 20. **Educational activities selected for getting information on farming by 223 beginning dairy farmers**

Activities	Number	Percent*
Going on tours	146	66
Observing demonstrations	138	62
Instruction on the farm	128	57
Reading farm magazines	126	57
Reading farm bulletins	108	48
Small group instruction	101	45
Listening to talks	93	42
Practice in doing jobs	92	41
Observing movies and slides	50	22
Reading newsletters	34	15
Listening to radio	31	14
Panel discussions	24	11
Watching television	18	8
Large group discussions	16	7
Reading newspapers	10	5

* Percentage of sample selecting activity as 1 of 5.

Table 19. **Time of day 223 beginning dairy farmers listened to radio programs about agriculture**

	Time of day					
	Morning		Afternoon		Evening	
	Number	Percent	Number	Percent	Number	Percent
Listened to radio	148	67	42	19	66	30
Did not listen to radio	75	33	181	81	157	70
Totals	223	100	223	100	223	100

farm, the beginning farmers were asked to select the 5 that they considered to be of most value to them. Table 20 shows that the range of participation in these activities was from 66 to 5 percent of the respondents. The first 4 of those tabulated were engaged in by more than half of the group (57%), the last 3 by 8 percent or less.

Establishment Patterns Used by Beginning Dairy Farmers in Attaining Their Present Status

Another of the specific objectives of this study was to ascertain the establishment patterns of beginning farmers, 56 percent of whom were owners, 41 percent partners, and 3 percent classified as tenants. As expected, they used several ways to attain their present status. The most common of the 8 principal ones, followed by 39 percent of the respondents, was to work for agricultural wages; 22 percent became owners in this way, 16 percent partners, and 1 percent tenants. Another significantly large group (29%) attained present status directly, that is, immediately upon completing their education or military service. The third most common pattern (12%) was to be engaged in both agricultural and nonagricultural work. Surprisingly, only a meager proportion (5%) of beginning farmers relied only on nonagricultural wages to make a start in farming.

Using the figures in table 21, it can be determined that 62 percent of the respondents worked for wages before establishing themselves in farming, and mostly in agricultural occupations. Table 22 shows the kinds of agricultural occupations held by the 22 percent of the beginning farmers who worked for agricultural wages before becoming owners. The most important of these was that of farm laborer on the home farm. Furthermore, 47 of

Table 21. **Establishment patterns used by 223 beginning dairy farm operators in attaining present status**

Pattern	Present status						Total	
	Owners		Partners		Tenants			
	No.	%	No.	%	No.	%	No.	%
From agricultural wages to present status	48	22	36	16	3	1	87	39
Directly to present status	23	10	43	19	0	0	66	29
From both agricultural and nonagricultural wages to present status	19	8	8	4	0	0	27	12
From nonagricultural wages to present status	6	3	5	2	0	0	11	5
From partner to owner	8	4	NA	NA	NA	NA	8	4
From tenant to owner	3	1	NA	NA	NA	NA	3	1
From agricultural and nonagricultural wages to partner to owner	9	4	NA	NA	NA	NA	9	4
From agricultural wages to tenant to owner	4	2	NA	NA	NA	NA	4	2
Miscellaneous	5	2	0	0	3	1	8	4
Totals	125	56	92	41	6	3	223	100

Table 22. **Agricultural occupations held by 48 beginning dairy farmers whose establishment pattern was from agricultural wages to owner**

Occupation	Total	
	Number	Percent
Farm laborer at home	26	12
Farm laborer away from home	6	3
Farm laborer at home, to hired manager, to off-farm agricultural occupations*.	6	3
Farm laborer simultaneously away from and at home	3	1
Other	7	3
Farm laborer at home to farm machinery dealer		
Milk truck driver and farm laborer away from home		
Farm laborer away from home to miller		
Miller to mechanic		
Farm laborer at home, to hired manager, to produce clerk, to produce manager		
Hired manager to farm laborer away from home		
Silo construction to farm laborer at home		
Totals	48	22

* Milk truck driver, cheese maker, milk processor, and agricultural construction

the 48 farmers under discussion had been farm laborers at one time or another, attesting to the commonality of working in this capacity as a prelude to becoming established in farming. Also to be noted is the fact that 12 of the 48 farmers had worked in off-farm agricultural occupations sometime before attaining present status. Though the data are not shown, the researchers report that findings on the kinds of agricultural occupations held by beginning dairy farmers, irrespective of establishment patterns, were essentially similar to those reported in table 22.

Agricultural Procedures Needing Modification

One phase of the study was to determine which procedures followed or information known by beginning dairy farmers should be modified, in the opinion of the experts. Information on the procedures selected for study were elicited through open-ended questions. Only the procedures or information known by the farmer that should be changed are discussed below under 3 headings: dairy husbandry, crop production, and farm management.

Dairy husbandry

A consistent recommendation as to how soon after calving a cow should be bred is 60 to 80 days, to provide sufficient time for her to recover from the ordeal and to regain her strength. This practice was observed by three-fourths of the farmers, while one-fourth waited more than 80 days (table 23). This latter period is justified if the farmer holds off the breeding date so that his cows will freshen in the fall.

Table 23. **Time between calving and breeding**

Time	Total	
	Number	Percent
Under 60 days	5	2
Between 60 and 80 days	157	71
More than 80 days	58	26
So cows will freshen in fall	3	1
Totals	223	100

However, only 1 percent suggested this possibility.

Thirteen diseases of dairy cows were reported by one or more of the beginning farmers as being common in the area in which they were doing business (table 24). Mastitis, as expected, was reported most frequently—nearly 40 percent more often than the next on the list, hoof rot, 46 percent more often than milk fever, and 56 percent more often than leptospirosis. About 20 percent of the farmers thought that cystic ovaries, scours, and hardware disease were common in their areas.

It was found that even though mastitis was the most common dairy disease, there was some laxity in its prevention. For example, 60 percent always milked their cows in the same order. Only 4 percent milked first calf heifers first, while only 13 percent milked cows with mastitis last. Neither was isolation of purchased cows well observed. Fortunately, however, 24 percent of the farmers belonged to or planned to enter a mastitis control program.

Crop production

The responses by beginning farmers on how they decided the amount of fertilizer to apply on corn are given in table 25. The 3 most common and reliable sources were used singly or in combination by about one-fourth of the group, the next 2 were used by a small percentage, with the total range being from 26 to 4 percent. Five percent used no fertilizer at all.

Table 24. **Most common local dairy cattle diseases, as listed by 223 beginning dairy farmers**

Disease	Total farmers reporting	
	Number	Percent
Mastitis	194	87
Hoof rot	111	50
Milk fever	92	41
Leptospirosis	69	31
Cystic ovaries	50	22
Scours	49	22
Hardware disease	46	21
Ketosis	36	16
Breeding problems	20	9
Pink eye	16	7
Acetonemia	13	6
Pneumonia	9	4
Shipping fever	4	2

The desired pH for soil to produce crops was known by 79 percent of the farmers, but only 41 percent knew their soil type. However, farmers were apparently aware of the

Table 25. **Sources of information relied upon by 223 beginning dairy farmers for fertilizing corn**

Source	Total	
	Number	Percent
Soil test results	58	26
Personal experiences	57	26
Personal experience, soil test results, and recommendations of specialists	44	20
Recommendations of specialists	42	19
Relatives and/or other	10	4
News media	—	—
None applied	12	5
Totals	223	100

Table 26. **Plant population per acre for silage corn as reported by 223 beginning dairy farmers**

Number of plants per acre	Total	
	Number	Percent
More than 20,000	85	38
16,000 to 20,000	58	26
Less than 16,000	5	2
Did not know	62	28
No corn grown	13	6
Totals	223	100

Table 27. **Number of plant diseases and insects named by 223 beginning dairy farmers**

Number of:	Number	Percent
Plant diseases named		
0	168	75
1	40	18
2	12	6
3	3	1
Insects named		
0	113	50
1	78	35
2	23	10
3	8	4
4	1	1

physical characteristics of their soil, that is, whether it was gravelly, sandy, silt, or loam.

The plant population per acre for silage corn reported by farmers is shown in table 26. Although the New York State College of Agriculture recommends 16,000 to 20,000 plants per acre, only 26 percent of the farmers reported this number, whereas 38 percent had planted more than the advised maximum. As many as 25 percent did not know their plant population.

One of the significant findings with respect to farmers' knowledge of common farm practices had to do with plant diseases and insects. When asked to name common plant diseases and insects on their crops, most of the farmers did not name any disease; less than one-fifth named 1 and about one-seventeenth named 2 (table 27). Whereas the interviewers consistently saw evidence of diseases and insects on the farms, as many as half of the farmers thought they had none and two-thirds reported only 1.

Farm management

Farm records are often considered one of the most important assets in the operation, organization, and management of a good farm business. Practically all of the farmers used their records for income tax purposes, and half of them or more used their records to analyze specific

Table 28. **Use made of farm records by 223 beginning dairy farmers**

Use of records	Total	
	Number	Percent
Compute income tax return	214	96
Analyze a specific enterprise	120	54
Improve farming practices	111	50
Select and sell dairy animals	9	5
Do not use written records	8	4

Table 29. **Types of milk production records kept by 223 beginning dairy farmers**

Type of record	Total	
	Number	Percent
DHIA	78	35
Owner-sampler	64	29
Kept own records	31	14
No records kept	50	22
Totals	223	100

enterprises and to improve farming practices. Little use was made of records to select and sell dairy animals (table 28).

Since these men were dairy farmers, milk production records were important in their business. Four-fifths of them used either DHIA or owner-sampler records or kept their own (table 29). Interviewers reported that the latter were often inadequate and inaccurate. In reality it appeared that 64 percent of the sample had adequate milk production records while 36 percent had inadequate or no records.

Adoption of Approved Practices

Another phase of this study was to identify the extent to which *selected approved practices* had been adopted by beginning dairy farmers. In so doing, approved practices not used by farmers would be simultaneously identified, and these latter practices would provide an indication of educational needs. The list of approved practices was developed for 4 major aspects of farming: dairy husbandry, crops production, farm mechanics, and farm management. These practices were developed by the investigators and approved by 2 specialists in each of the aspects. Furthermore, these practices were considered essential in the operation of any dairy farm.

Approved practices in dairy husbandry

Eleven practices in dairy husbandry were selected for study. The mean number of these practices that had been adopted by the farmers was 6.9, with a range of 1 to 10 and a standard deviation of 1.7. Thus, 68 percent of the farmers used between 5.2 and 8.6 dairy husbandry practices.

The selected practices were ranked on the basis of the number using each and listed in descending order in table 30. The percentage

Table 30. **Selected approved dairy practices as used by 223 beginning dairy farmers**

Approved practice	Total	
	Number	Percent*
Feed colostrum to calves	221	99
Use breeding and calving records	215	96
Use artificial insemination	192	86
Breed heifers according to size	169	76
Provide mineral mixture free choice	158	71
Have veterinarian examine cows for pregnancy	138	62
Provide special grain mixture for calves	128	57
Use bulk tank	120	54
Use calving pen	94	44
Use antibiotics in feeding calves	63	28
Isolate purchased cows temporarily	27	12

* Percent for each practice.

gap between the practice of feeding colostrum to newborn calves, which headed the list, and that of isolating purchased cows temporarily, which was the least used, was 87 percent, or a difference of 194 farmers. The first 8 practices were each used by more than half of the respondents, and 11 percent indicated that they intended to adopt practice number 6. The last 3 approved practices were not commonly adopted by the farmers.

Approved practices in crop production.

It was assumed that these practices would be applicable on most farms, although there could be exceptions depending upon the conditions on the farm and the objectives of the farmer. For example, contour strip cropping would not apply to level cropland. Unfortunately, the present study did not go into sufficient detail to establish grounds for exceptions. However, from a total of 14 practices studied, farmers reported using an average of 9.0, with a range of 0 to 13 and a standard deviation of 2.5.

The approved crop practices and percentage of farmers using them are listed in table 31. More farmers used treated, hybrid corn and certified oat seed than any of the other 14 practices. The application of chemicals to control weeds was reported by 79 percent of the sample. Nearly all of the large percentage of farmers who used chemical weed control, limited it to the corn crop. Those who cooperated in the Soil Conservation Program usually installed tile for soil drainage or added lime to the soil. More than one-fourth of the farmers did not practice rotation of crops, and more than one-third did not use a fertilizer program for the whole farm.

Although band seeding has been recommended in New York State, only 30 percent of the farmers reported its use and many of them had no idea what it was or how it was done. Several respondents stated that they did not have the equipment to put this practice to use,

Table 31. **Selected approved crop production practices used by 223 beginning dairy farmers**

Approved practice	Total	
	Number	Percent
Use treated, hybrid corn and certified oat seed	202	91
Use lime to maintain soil pH	196	88
Use hay crusher	185	83
Use soil testing program	184	83
Use chemicals to control weeds	177	79
Cooperate in SCS program	172	77
Use planned crop rotation system	163	73
Use planned grazing system	118	66
Use fertilizer program for whole farm	143	64
Harvest silage corn in hard dent stage	135	61
Clip permanent pastures	112	50
Top dress pastures with commercial fertilizer	109	49
Use band seeding	66	30
Use contour strip cropping	42	19

Table 32. **Selected approved farm mechanics practices used by 223 beginning dairy farmers**

Approved practices	Total	
	Number	Percent
Keep all machinery and equipment serviced	219	98
Keep safety shields over moving machinery parts	201	90
Prepare machinery for use during slack periods	193	86
Store machinery under cover	188	84
Use mechanical ventilators in barns	148	66
Keep and maintain home farm shop	116	52

and others indicated that the equipment required was too expensive.

Many of the farmers considered their land too level for strip cropping. This may account for its being the least used of the crop production practices.

Approved practices in farm mechanics

Only 6 practices were listed in the survey form. Being few in number and of a general nature, they gave a limited overview of a few areas of farm mechanics. Of these 6, the farmers used an average of 4.8, with a range of 1 to 6 and a standard deviation of 1.5. The percentage of farmers making use of these practices was high, with even the least popular being engaged in by more than half the respondents.

Approved practices in farm management

It was assumed that the 9 practices selected for study were applicable to all dairymen. Of these, the beginning farmers used an average of 6.3, with a range of 0 to 8 and a standard deviation of 2.1.

The percentage of farmers using these practices was high, although 13 percent of the 223 farmers did not report keeping cash account records, nor did 21 percent analyze and study their farm records each year. The practice most used (by 89% of the farmers), which is admittedly of a non-specific nature, was that of keeping informed on farm prices and outlook. But even

Table 33. **Selected approved farm management practices used by 223 beginning dairy farmers**

Approved practice	Total	
	Number	Percent
Keep informed on farming prices and farming outlook	199	89
Keep cash account records	193	87
Analyze and study farm records each year	177	79
Prepare and use financial statement	168	75
Have map of home farm	164	74
Use dairy production records	144	65
Use soil map in analyzing farm business	132	59
Use herd health records	116	52
Use program to improve herd health	106	48

the least common of the management practices were reported by approximately half of the beginning farmers.

Problems With Which Beginning Farmers Wanted Assistance

A list of 50 common problems was presented to beginning farmers who were asked to indicate whether they felt a need for help in working out a solution to each of the problems. It is significant to note that even though they may have had a problem, if they believed they could solve it without assistance, it was not considered to be a problem.

The findings are presented in terms of problems in dairy husbandry, crop production, farm mechanics, and farm management, and in descending order of frequency as reported by the farmers.

Dairy husbandry problems

Eleven problems in dairy husbandry were identified with which beginning farmers felt a need for help. For the sample there was an average of 4.7, with a standard deviation of 2.0.

The problem most frequently checked by beginning farmers was how to increase milk production (table 34), which probably indicates that they want help in deciding which of many practices to emphasize. However, it can be readily seen that a solution to several of the problems in table 34 would result in increased milk production. More than half the respondents indicated a need for help on the first 4 practices, and less than a quarter were interested in the last 6 problems.

Farm mechanics problems

The farmers report a total of 10 different problems in farm mechanics with which they would like assistance in solving. There was an average of 4.4 problems per farmer, with a standard deviation of 2.3.

The use of electricity on the farm was the most frequently mentioned problem (73%). Constructing and repairing farm buildings and providing facilities for housing and milking were the next most fre-

Table 34. **Dairy husbandry problems with which 223 beginning dairy farmers indicated a need for help**

Problems	Number	Percent
Increase milk production	187	84
Maintain herd health	180	81
Select feed ration	152	68
Select bulls for increased milk production	142	64
Decide amount of grain and forage for each cow	95	43
Feed calves from birth to 6 months	51	23
Manage and care for young stock	50	22
Select replacement stock	49	22
Decide size of herd	48	22
Feed dairy heifers	42	19
Decide which animals to cull	40	18

Table 35. **Farm mechanics problems with which 223 beginning dairy farmers indicated a need for help**

Problems	Number	Percent
Electrification of farm	162	73
Construct and repair farm buildings	148	66
Provide facilities needed for housing and milking	131	59
Determine size of power machinery and equipment	102	46
Set up farm shop	98	44
Adjust, maintain, and repair farm machinery and equipment	90	40
Decide type of powered machinery and equipment	90	40
Get most efficient use from machinery and equipment	81	36
Use farm machinery and equipment safely	42	19
Prepare machinery for winter storage	42	19

quent. Between 40 and 46 percent of the sample stated that they needed help in selecting the type, kind, and size of machinery and equipment and in the operation and repair.

Crop production problems

In this category beginning farmers named a total of 13 problems, with a mean of 7.5 problems per farmer and a standard deviation of 2.9. Table 36 lists 13 problems with which beginning farmers indicated a need for help. All but 8 percent of the sample wanted help with increasing soil productivity. Almost 75 percent of the farmers wanted advice for the next 4 items listed, and for 7 of the remaining 8, nearly 50 percent felt the need of assistance. But less than one-fifth were uncertain about when to harvest their crops.

Farm management problems

The farmers reported a total of 17 farm management problems in solving which they would like assistance (table 37). There was an average of 9.3 problems per farmer, with a standard deviation of 3.4. The largest group of farmers were concerned with knowing how to handle legal problems, but combined, the 2 forms of governmental

Table 36. **Crop production problems with which 223 beginning dairy farmers indicated a need for help**

Problems	Number	Percent
Increase soil productivity	205	92
Select kind of fertilizer	176	79
Select best yielding seed variety	169	76
Control weeds	163	73
Control diseases and insects	162	73
Decide how to get most from available forage	122	55
Increase yield of pastures	117	53
Get complete stand of crops	109	49
Determine yield from forage or grain crop	106	48
Prevent soil erosion	103	46
Arrange fields for most efficient use	102	46
Avoid winter kill of forages	95	43
Determine when to harvest	37	17

Table 37. **Farm management problems with which 223 beginning dairy farmers indicated a need for help**

Problems	Number	Percent
Know laws and other legal aspects affecting farm business	196	88
Interpret governmental programs	183	82
Know services available through government	180	81
Decide how to increase efficiency of operation	172	77
Decide type and amount of insurance	153	69
Work out income tax and Social Security records	152	68
Form agreements for renting or buying additional land	148	67
Plan credit needs	147	66
Analyze farm business	140	63
Market farm products	129	58
Plan retirement program	120	54
Keep business records	106	48
Prepare farm budget	99	44
Keep records on breeding, calving, production	45	20
Hire and manage farm labor	40	18
Take inventory	33	15
Deal with other miscellaneous farming problems	21	9

assistance created the largest number of problems. Although the level of efficiency attained by beginning farmers is high, more than three-fourths of them expressed a need for further assistance with this aspect of their operations. Approximately two-thirds of the farmers were concerned with 5 of the 7 problem areas that are involved with the financial side of farm management. The other 2, business records and budget, were somewhat less of a problem.

Relative importance of the expressed needs

After the beginning farmers had checked through the list of 50 problems, indicating those with which they needed assistance, they were asked, "Which of these problems do you feel are the *most important* to reach the goals you have set?" This question was an attempt to ascertain which were deemed most important by the group as a whole. A list of these are presented in table 38 in a rank order on the basis of the most frequent to the least frequent. It should be mentioned that some of these problems really involved 2 or more problems. As an example, the problem, finding ways to increase milk production, really could be divided into a number of component problems. Yet, this is probably the way many beginning farmers see, recognize, and state their most important problems.

Ten of the first 20 most commonly mentioned important problems were in farm management; 5 were in crop production, 3 in farm mechanics, and 2 in dairy husbandry. Of all those listed, the 5 most important were: increasing milk production, planning credit needs, marketing farm products, increasing soil productivity, and increasing the efficiency of the farm operation.

Table 38. **Rank of problems considered most important by 223 beginning dairy farm operators**

Problem rank	Problem
1	Increasing milk production
2	Planning credit needs
3	Marketing farm products
3	Increasing soil productivity
5	Increasing efficiency of farm operation
6	Analyzing farm business
7	Interpreting governmental programs
8	Knowing laws and other legal aspects of farm business
8	Constructing and repairing farm buildings
10	Keeping farm business records
10	Controlling plant diseases and insects
12	Maintaining herd health
13	Providing facilities for milking and housing herd
14	Selecting seed varieties
15	Planning an insurance program
16	Keeping income tax and Social Security records
17	Using electrical power on farm
17	Increasing pasture yield
19	Selecting fertilizer
20	Planning agreements for renting or buying land
21	Setting up a farm shop
22	Getting the most out of forages
23	Using equipment and machinery efficiently
23	Recognizing governmental services available
25	Selecting feed rations
26	Controlling weeds
27	Selecting bulls
27	Hiring and managing farm labor
27	Determining amount to feed each cow
27	Determing size of machinery or equipment to buy
31	Getting a complete stand of crops planted
31	Adjusting, maintaining, and repairing farm equipment
31	Arranging fields for most efficient use
31	Feeding dairy calves from birth to six months
35	Selecting type of machinery and equipment to purchase
35	Preparing farm budget
35	Managing forages to avoid winter killing
38	Keeping records on breeding, calving, and production
38	Planning a retirement program
40	Deciding on size of herd to maintain
41	Preventing soil erosion
42	Selecting replacement stock
43	Determining amount a crop will yield
43	Preparing machinery for winter storage
43	Feeding dairy heifer 6 months and older
46	Determining when to harvest crops
46	Deciding which animals to cull
48	Managing and caring for young stock
49	Using farm machinery and equipment safely
50	Taking farm inventory

Summary

Dairying is by far the most important farming enterprise in New York State. In these times of rapid technological change, while it is becoming a more complex business, fewer and fewer dairy men are being called upon to feed proportionately increasing populations. To become established in the business of dairy farming, beginning operators require more knowledge and skill than ever before. It is in New York's best interest that beginning farmers acquire the knowledge and skill needed to become established in farming as efficiently as possible. One approach is to provide them with soundly based educational programs. Thus, the primary aim of this study was to identify those educational needs in dairy farm operation and management of beginning farm operators in New York.

To achieve this aim, the specific objectives for the study were to obtain information on beginning dairy farmers in the areas of personal characteristics, level of farming achievement, participation in educational activities and farm organizations, establishment patterns used in attaining their present status in farming, commonly used agricultural procedures, adoption of approved practices, and expressed educational needs and their relative importance.

Key informants submitted the names of 2260 beginning dairy farmers—defined in this study as those who were not more than 39 years of age, who had been farming for at least 1 year but not more than 7, and who were operating dairy farms as owners, partners, or renters at the time of the study. These farm operators were listed according to their agricultural regions in the state, and a random sample of slightly more than 10 percent was drawn from each of the 13 regions. Usable data were collected from 223 beginning farmers by the interview technique.

Personal characteristics

Beginning dairy farmers had a mean age of 26.3. Eighty percent of them were married and had an average of 2 children per family. They had completed an average of 12.4 years of schooling, with only 13 percent of the group not having attained high school graduation. On the other hand, one-fourth of the sample completed 1 or more years of college. While they were in high school, 74 percent of the beginning farmers had taken 1 or more years of vocational agriculture. Two-thirds of them had been 4-H members for 1 to 11 or more years. With respect to their scholastic achievement (as shown by rank in class), beginning farmers had a mean percentile scholastic class rank of 46.

Level of farming achievement

One of the most common indices of achievement in farming is the size of business. Four separate factors provide an indication of size, namely: work units per farm, man equivalent per farm, cows per farm, and pounds of milk sold per farm. In New York, the average beginning

dairy farm operator had 523 work units, 1.8 man equivalent, and 43 cows that produced 435,100 pounds of milk in 1962. For the 4 factors mentioned, in comparison with the achievements of commercial farmers in New York as reported in the 1964 Farm Business Chart issued by the Department of Agricultural Economics, New York State College of Agriculture, the respondents in this study ranked in the 7th, 6th, 8th, and 8th decile respectively, or better than the average farmers in the normative population.

Regarding production, expressed as pounds of milk sold per cow, beginning dairymen sold 10,119 pounds of milk per cow, a level of achievement which ranked them in the 8th decile of commercial dairymen. Furthermore, with respect to the 3 labor efficiency factors selected for study, beginning dairymen had 291 work units per man, 24 cows per man, and 241,722 pounds of milk sold per man, an achievement level that ranked them in the 7th, 8th, and 9th deciles, respectively.

Notwithstanding the notable achievement of these dairymen who had been operating farms from 1 to 7 years, it should be mentioned that great variations existed among the respondents. For example, whereas 39 percent of the sample had from 30–39 cows, 8 percent had 19 cows or fewer, while 7 percent had 70 cows or more.

For the sample under study, the average farm income (receipts minus expenses) was $5000 with a range of $1600 to more than $12,000.

Participation in educational activities and in farm organizations

More than 20 different farm publications were read by beginning farmers whose average was 6 magazines. Those most frequently read and the percentage of respondents reading each were: *Farm Journal,* 87 percent; *American Agriculturalist,* 77 percent; *Hoard's Dairyman,* 72 percent; *N.Y.A.B.C. Cooperator,* 70 percent; and *Successful Farming,* 67 percent.

In this study, feed dealers, agricultural extension agents, fertilizer dealers, seed dealers, the Soil Conservation Service, and commercial banks were listed by 76, 70, 64, 60, 58, and 50 percent of the 223 beginning farmers, respectively, as a source of farming or technical assistance 1 or more times during the year covered by the study. These farmers received assistance on an average of 12.4 times in the year.

The Extension Service was the organization to which the largest number (86%) of beginning farmers belonged. About two-thirds of the sample were members of farm cooperatives, milk marketing agencies, and the Soil Conservation Service, while 52 percent, 36 percent, and 22 percent, respectively, were members of the Farm Bureau, the Young Farmer organization, and the Grange. As expected, the largest number of beginning farmers attended meetings held by the Extension Service, farm cooperatives, and milk marketing agencies. However, the Young Farmer classes, to which only 36 percent of the beginning farmers belonged, had the highest percentage of attendance, with 53

percent of its members attending 100 percent of the meetings.

Few beginning farmers watched agricultural programs on television, with afternoon programs being watched by 21 percent of the respondents. On the other hand, 67 percent of the farmers reported listening to radio programs in the morning and 25 percent at milking time.

From a list of 15 activities through which one may obtain information on operating a farm, beginning farmers selected the following 5 in descending order of importance: going on tours (66 percent), observing demonstrations (62 percent), receiving on-farm instruction (57 percent), reading farm magazines (57 percent), and reading farm bulletins (48 percent).

Establishment patterns used to attain present status

At the time of the study, 56 percent of the sample were owners, 41 percent were partners, and 3 percent were tenants. As expected, they had followed several patterns in attaining their present status. The most common, followed by 39 percent, was to work for *agricultural* wages. Another large group, 29 percent, attained their present status directly, that is, immediately upon completion of their schooling or military service. The third most common pattern was to work in *both* agricultural and nonagricultural pursuits, a pattern followed by 12 percent of those studied. Only 4 percent worked *only* for nonagricultural wages before attaining their present status. By far the most important agricultural occupation before ownership or partnership was that of farm laborer on the home farm.

Agricultural information or procedures that should be modified

In the field of dairy husbandry, 26 percent of the farmers allowed a lapse of more than 80 days after calving before having cows bred. Incidence of dairy diseases was reported as follows: mastitis was the most prevalent, being reported by 87 percent of the respondents. Hoof rot was mentioned by 50 percent, milk fever by 41 percent, and leptospirosis by 31 percent. About one-fifth of the farmers thought that cystic ovaries, sours, and hardware diseases were common in their areas. Sixty percent of the beginning farmers always milked their cows in the same order. Only 4 percent milked their first calf heifers first, while only 13 percent milked cows with mastitis last.

With respect to crop production practices, 26 percent of the farmers determined the amount of fertilizer to apply on corn on the basis of soil test results, an equal percent did so on the basis of personal experiences, 19 percent on the recommendations of specialists, while 20 percent depended upon all 3 sources. Although the New York State College of Agriculture recommended a silage corn population of 16,000–20,000, it was found that 38 percent of the farmers planted more than 20,000 plants per acre, 26 percent planted at the recommended rate, while 28 percent did not know their rate of planting. With regard to plant

diseases and insects, 75 percent of the farmers did not name any disease, while 50 percent thought they had no insects, in spite of the fact that interviewers consistently saw evidence of diseases and insects on the farms of many who reported having none.

Fifty-four and 50 percent, respectively, of the sample used their records to analyze specific enterprises and to improve their farming practices. Little use was made of the records to select and to sell dairy animals. Thirty-five percent used DHIA records, 29 percent used owner–sampler records, 14 percent kept their own milk production records, while 22 percent had no records at all.

Use of approved practices

Another phase of this study was to identify the extent to which selected approved practices had been adopted by beginning farmers, and in so doing, those not being used would be readily discerned. These latter practices would provide an indication of educational needs of the respondents.

Of the 11 approved dairy practices submitted to the persons included in this survey, the following were *not* practiced by one-third or more of them: examining cows for pregnancy (38 percent), providing a special grain mixture for calves (43 percent), using a bulk tank (46 percent), using a calving pen (56 percent), using antibiotics in feeding calves (72 percent), and isolating purchased cows temporarily (88 percent).

A third or more of beginning farmers did *not* use 7 of the 14 approved crop production practices, namely, a planned crop rotation system (34 percent), a fertilizer program for the whole farm (36 percent), harvest of silage corn in the hard dent stage (39 percent), clipping permanent pastures (50 percent), top dressing pastures with commercial fertilizer (51 percent), band seeding (70 percent), and contour strip cropping (81 percent).

Only 6 practices were listed in the field of farm mechanics. Of these, 2 were *not* adopted by one-third or more of the sample. These were: mechanical ventilators in barns (34 percent) and home farm shops (52 percent).

Nine approved farm management practices were studied with these findings: 35 percent did *not* use dairy production records; 41 percent did *not* use a soil map in analyzing their farm businesses; 48 percent did *not* use herd health records; and 52 percent did *not* use a program to improve herd health.

Expressed or felt needs of beginning farmers

A list of 50 common problems in 4 areas of farm operation was presented to beginning farmers who were asked to indicate whether they felt a need for help in working out a solution to each problem listed. Of 11 dairy husbandry problems studied, the most important, together with the percentage of respondents selecting each, were: finding ways to increase milk production, (84 percent), maintaining herd health (81 percent), selecting feed rations (68 percent), selecting bulls

that will increase milk production (64 percent), and determining grain and forage rations for each cow (43 percent).

In the area of farm mechanics, 73, 66, and 59 percent of the sample, respectively, indicated a need for help with the 3 most important problems cited, namely, farm electrification, constructing and repairing farm buildings, and providing needed facilities.

With respect to crop production problems, 13 were listed for study. Increasing soil productivity was at the top of the list, being reported by 92 percent of the sample. About 75 percent of the sample reported these 4: selecting fertilizers, selecting seed varieties, controlling weeds, and controlling disease and insects.

Of the 16 farm management problems treated in this study, the 4 identified most frequently and the percentage of the sample selecting each were: knowing laws and other legal aspects relating to the farm (88 percent), interpreting governmental programs (82 percent), knowing the available governmental services (81 percent), and increasing efficiency of operation (77 percent).

When beginning farmers were asked to identify, among the 50 problems listed, which ones were the *most important,* 10 of the first 20 most commonly mentioned important problems were in farm management. Five of the problems were in crop production, 3 in farm mechanics, and 2 were in dairy husbandry. Of all the problems listed, the 5 most important were: increasing milk production, planning credit needs, marketing farm products, increasing soil productivity, and increasing the efficiency of the farm operation.

Conclusions

1. For the most part, beginning dairy farm operators are a well-educated group, having completed an average of 12.4 years of schooling with one-fourth of the group having completed 1 or more years of college. The stereotype that farmers are not educated may be rejected with confidence insofar as beginning dairy farm operators in New York are concerned.
2. Beginning dairy farmers rank higher than the average commercial dairyman in New York as far as size of business, production, and labor efficiency are concerned. It may therefore be concluded that beginning dairy farmers do not generally make up that portion of commercial dairymen who have reached only the lower levels of achievement in these elements of the dairy business.
3. Although the beginning farmers were progressively becoming established in a dairy business, several of them needed to increase the size of business and income to attain a satisfactory level of living.

4. Beginning dairy farmers are well read with respect to farm publications. They seek advice from not few but many sources in the conduct of their business and they belong to a number of farm organizations, the most popular being the Extension Service. Of the agencies to which beginning farmers look for educational and technical assistance, the Young Farmer classes have been uniquely successful in maintaining high attendance among its members.
5. With respect to learning activities of a formal nature, beginning farmers seem to prefer those that involve a high degree of learner participation, such as tours, demonstrations, small group instruction and, individual on-farm instruction.
6. While many beginning farmers have attained their present status of owner, partner, or tenant directly without going through some other category, most of them have first worked as farm laborers, usually on the home farm. Thus, these beginning farmers have spent practically their entire work life in farming.
7. The beginning dairy farmers indicated a large number of problems or practices with which they would like assistance in working out a solution. With the help of an educator in agriculture and through a systematic analysis of the farm business, they can identify their problems.
8. Farm management was the single most important area of educational need of beginning dairy farm operators. They were seeking assistance in improving cost control and farm efficiency.
9. On the basis of the findings in this study with respect to their level of achievement in farming, the agricultural procedures they commonly used, the number of approved practices they did *not* adopt, and the number of problems they identified, it is concluded that there is a great need for educational programs in agriculture for beginning dairy farm operators in New York.
10. Although a number of needs common to a large majority of the respondents were identified, there still exists a wide variation in the specific needs of individual farmers.
11. It is concluded that the subject matter content for a sound educational program for beginning farmers in New York may be based on the findings of this investigation and would include a treatment of: (1) a modified form of those agricultural procedures commonly used by beginning farmers, (2) those problems identified by most respondents, (3) those problems rated as most important, and (4) those approved practices that most respondents did not adopt.
12. On the basis of the findings reported earlier, the researchers conclude that the following are the problems for which begin-

ning dairy farmers, as a group, most need educational help:

Dairy Husbandry

Isolating purchased cows temporarily
Using antibiotics in feeding calves
Using a calving pen
Using a bulk tank
Finding ways to increase milk production

Maintaining herd health
Selecting feed rations
Selecting bulls that will increase milk production

Crop Production

Using contour strip cropping
Using band seeding
Top dressing pastures with commercial fertilizer
Clipping permanent pastures
Increasing soil productivity
Selecting the proper fertilizer
Selecting the best yielding seed variety
Controlling weeds
Controlling diseases and insects
Increasing pasture yields

Farm Mechanics

Using electrical power on the farm
Constructing and repairing farm buildings
Providing facilities for housing and milking
Determining size of power machinery and equipment

Farm Management

Improving herd health
Knowing laws and other legal aspects that affect farm business
Interpreting governmental programs
Knowing the available government services
Deciding how to increase efficiency of operation

Deciding on type and amount of insurance
Keeping records and reporting income tax and Social Security
Planning agreements for renting or buying additional land
Planning credit needs
Analyzing the farm business
Marketing farm products

Implications

1. The level of instruction provided to beginning dairy farmers must reflect their educational achievement and intellectual ability. There should be increasing efforts to continue to raise the academic level of all instructional programs designed for beginning dairy farm operators. They are capable of learning the finer points needed to become successful farmers.
2. The emphasis in education for these farmers should be on assisting them both to maintain and to raise their achievement

level. Furthermore, inasmuch as the level for this group is above average, they should continue to develop their capacity to meet the competitive economic demands of the future.

3. Educational program planners should investigate ways and means whereby the efforts of interested farm organizations may be coordinated to the educational benefit of beginning farmers. Moreover, the techniques traditionally used in Young Farmer programs, such as small group meetings, systematic instruction, individual on-farm instruction, and others, may be of benefit to other educational agencies.
4. Since beginning farmers as a group have spent most of their work life in farming, program builders may assume that they have a fairly high level of experience, therefore the subject matter topics should be selected accordingly. Furthermore, in identifying future beginning farm operators, greater emphasis should be placed on considering young men working on home farms.
5. To determine the content to be included and the learning activities to be used in an educational program for any given group of beginning dairy farmers, the problems of the group should be systematically solicited. Special consideration should be given to those learning activities, usually involving a high degree of learner participation, that beginning farmers themselves are able to identify.
6. Efforts by agricultural agencies, governmental or private, to assist beginning dairy farmers to become more firmly established in their businesses should be continued. The kind of effort most likely to achieve this end is the furtherance of educational programs designed especially for this group who have fairly similar needs. Educational institutions have a real opportunity in this regard and should expand their services to larger numbers of beginning farmers.
7. Since this study revealed a wide variation in the educational needs of the group, care should be taken to provide instruction in areas that are meaningful to individuals not only on a group basis but also on an individual or small group basis, so as to include problems of concern to a limited number. This can be done either by providing individual on-farm instruction or by the newer technique of programmed instruction.

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